Product Description
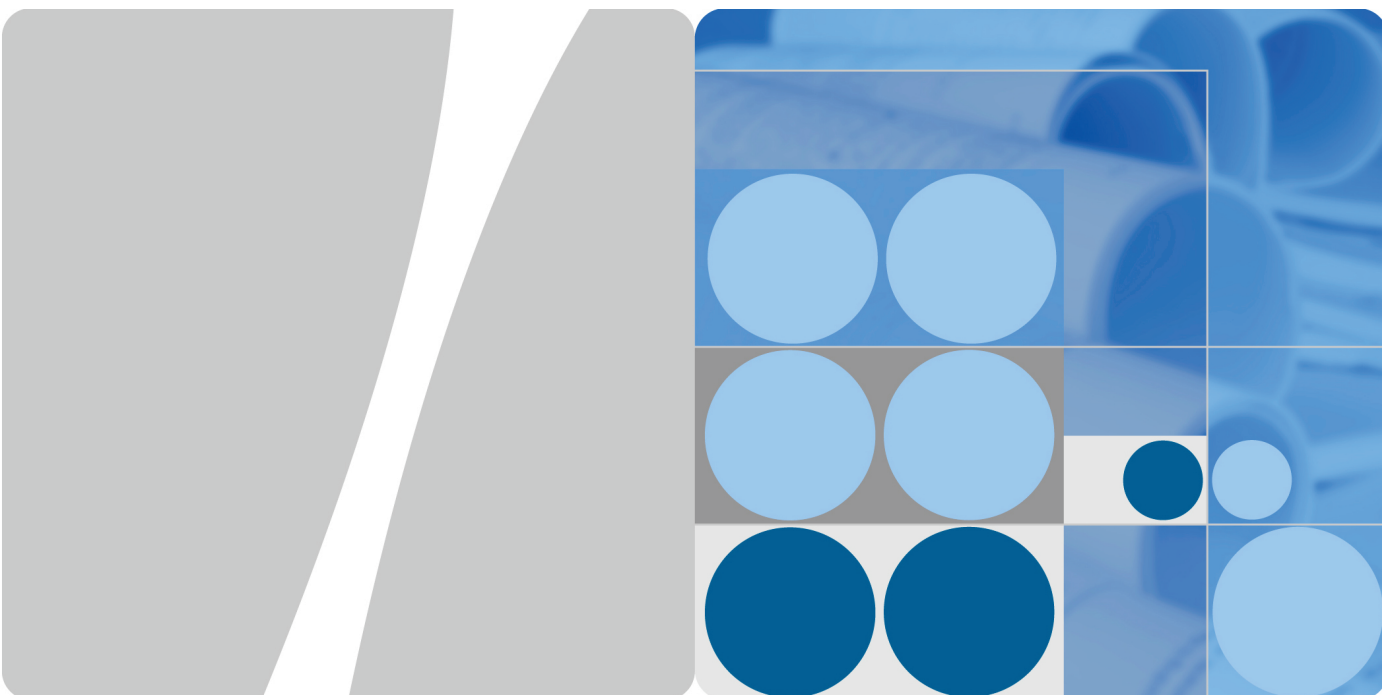
HUAWEI E5788u-96a Mobile WiFi
V100R001

Issue   03

Date   2017-08-01

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About This Document

Summary

This document provides information about the major functions, supported services and system architecture.

The following table lists the contents of this document.

Chapter	Details
1 Overview	The supported network modes, basic services and functions, and the appearance of the product.
2 Features	The supported features and technical specifications of the product.
3 Services and Applications	The services and applications of the product.
4 System Architecture	The architecture of the product.
5 Packing List	The items contained in the package of the product.

History

Issue	Details	Date
01	First release.	2017-05-23
02	Add LTE CA on North-east Europe	2017-06-22
03	Revisied LTE CA	2017-08-01

Contents

1 Overview

1.1 Brief Introduction

HUAWEI E5788u-96a Mobile WiFi (hereinafter referred to as the E5788u-96a) is a high-speed packet access mobile hotspot. It is a multi-mode wireless terminal for SOHO (Small Office and Home Office) and business professionals.

The E5788u-96a supports the following standards:

- Long Term Evolution Carrier Aggregation (LTE CA)
- Long Term Evolution (LTE) Frequency Division Duplex (FDD)
- LTE Time Division Duplex (TDD)
- Dual Carrier High Speed Packet Access Plus (DC-HSPA+)
- High Speed Packet Access Plus (HSPA+)
- High Speed Uplink Packet Access (HSUPA)
- High Speed Downlink Packet Access (HSDPA)
- Universal Mobile Telecommunications System (UMTS)
- Enhanced Data rates for Global Evolution (EDGE)
- General Packet Radio Service (GPRS)
- Global System for Mobile communications (GSM)

The E5788u-96a provides the following services:

- LTE FDD packet data service
- LTE TDD packet data service
- DC-HSPA+ packet data service
- HSPA+/HSPA/UMTS packet data service
- EDGE/GPRS packet data service
- Short Message Service (SMS)

You can connect the E5788u-96a with the USB interface of a computer, or connect the E5788u-96a with the Wi-Fi. In the service area of the LTE CA/LTE FDD/LTE TDD/ DC-HSPA+/HSPA+/HSPA/UMTS or EDGE/GPRS/GSM network, you can surf the Internet and send/receive messages/emails cordlessly. The E5788u-96a is fast, reliable, and easy to operate. Thus, mobile users can experience many new features and services with the E5788u-96a. These features and services will enable a large

number of users to use the E5788u-96a and the average revenue per user (ARPU) of operators will increase substantially.

Figure 1-1 shows the profile of the E5788u-96a.

Figure 1-1 E5788u-96a profile

1.2 Optional Features

Optional features refer to features that are not supported by the standard version. These features can be customized according to operator or customer requirements. The E5788u-96a's optional feature is as follows:

- SIM lock

2 Features

2.1 Main Features

The E5788u-96a mainly supports the following features:

- LTE (DL) data service of up to 1Gbit/s
- LTE (UL) data service of up to 150 Mbit/s
- DC-HSPA+ (DL) data service of up to 43.2 Mbit/s
- HSPA+ (DL) data service of up to 21.6 Mbit/s
- HSDPA (DL) data service of up to 14.4 Mbit/s
- HSUPA (UL) data service of up to 5.76 Mbit/s
- UMTS data service of up to 384 kbit/s
- EDGE data service of up to 236.8 kbit/s
- GPRS data service of up to 85.6 kbit/s
- PS domain data service based on LTE/UMTS/GSM
- SMS based on LTE/UMTS/GSM
- Built-in LTE/UMTS/GSM and WLAN high gain antenna
- Wi-Fi 2.4 GHz/5 GHz bands
- LTE/3G/Wi-Fi auto offload
- Support for HUAWEI HiLink APP
- Press and Play
- IPv4v6 dual stack (optional)
- Built-in DHCP Server, DNS RELAY and NAT
- Online software upgrade
- Traffic statistic
- Support WPS function
- Touch screen
- USB 2.0(compatible USB 3.0)/Type-C interface
- Bluetooth function
- Remotely wake up your Wi-Fi
- Windows 7, Windows 8, Windows 8.1, Windows 10 (does not support Windows RT), MAC OS X 10.9, 10.10,10.11 and 10.12 with latest upgrades

2.2 Technical Specifications

2.2.1 Hardware

Table 2-1 lists the hardware specifications.

Table 2-1 Hardware specifications

Item	Specifications		
Technical standard	WAN: LTE CA/LTE FDD/LTE TDD /DC-HSPA+/HSPA+/HSPA/UMTS/EDGE/GPRS/GSM		
	WLAN: IEEE 802.11 a/ac/b/g/n		
Operating frequency	LTE CA	CA+2*2MIMO	CA+4*4MIMO
	Middle East	CA_1A-3A CA_1A-7A CA_1A-8A CA_1A-20A CA_3A-7A CA_3A-8A CA_1A-3A-20A CA_1A-7A-20A CA_3A-20A CA_3A-28A CA_3A-40A CA_7A-20A CA_38C CA_40C CA_41C CA_41A-41A CA_1A-3A-7A CA_1A-3A-8A CA_3A-7A-20A CA_1A-3A-7A-20A	CA_1A-3A(4+4) CA_1A-7A(4+4) CA_1A-20A(4+2) CA_3A-7A(4+4) CA_3A-20A(4+2) CA_3A-28A(4+2) CA_7A-20A(4+2) CA_38C(4+4) CA_40C(4+4) CA_41C(4+4) CA_1A-3A-7A(4+2+2) CA_1A-3A-20A(4+2+2)(Default support)or CA_1A-3A-20A(2+4+2)(Customizing support) CA_1A-7A-20A(4+2+2)(Default support)or CA_1A-7A-20A(2+4+2)(Customizing support) CA_3A-7A-20A(2+4+2)(Default support)or CA_3A-7A-20A((4+2+2)(Customizing support)
	Australia / New Zealand	CA_1A-3A CA_1A-5A CA_1A-7A CA_28A-40A CA_3C CA_3A-5A CA_3A-7A CA_3A-8A CA_3A-28A CA_3A-40A CA_3A-28A-40A CA_7C CA_7A-7A CA_7A-28A CA_40C CA_1A-28A CA_3A-38A CA_1A-3C CA_1A-3A-5A CA_1A-7A-28A CA_3C-5A	CA_1A-3A(4+4) CA_1A-5A(4+2) CA_1A-7A(4+4) CA_3C(4+4) CA_3A-5A(4+2) CA_3A-7A(4+4) CA_3A-28A(4+2) CA_7C(4+4) CA_7A-28A(4+2) CA_40C(4+4) CA_1A-28A(4+2) CA_1A-3C(2+4+4)(Default support)orCA_1A-3C(4+2+2)(Customizing support) CA_1A-3A-5A(4+2+2)(Default support)or CA_1A-3A-5A(2+4+2)(Customizing support) CA_3C-5A(4+4+2) CA_3C-7A(4+4+2)(Default support)or CA_3C-7A(2+2+4)(Customizing

Item	Specifications		
		CA_3C-7A CA_3A-7C CA_3A-7A-7A CA_3A-7A-28A CA_3A-40C CA_28A-40C CA_40D CA_7C-28A CA_3A-28A-40C	support) CA_3A-7C(2+4+4)(Default support)or CA_3A-7C((4+2+2)(Customizing support) CA_3A-7A-7A(4+2+2) CA_3A-7A-28A(2+4+2) CA_7C-28A(4+4+2)
	North-east Europe	CA_1A-3A CA_1A-7A CA_1A-20A CA_3C CA_3A-3A CA_3A-7A CA_3A-8A CA_3A-20A CA_3A-28A CA_7C CA_7A-8A CA_7A-20A CA_7A-28A CA_38C CA_3A-38A CA_20A-38A CA_1A-3C CA_1A-3A-7A CA_1A-3A-20A CA_1A-7A-20A CA_1A-7C CA_3C-20A CA_3A-7C CA_3A-7A-8A CA_3A-7A-20A CA_3A-7A-28A CA-7A-20A-38A CA_7C-28A CA_1A-3A-7C CA_1A-3A-7A-20A	CA_1A-3A(4+4) CA_1A-7A(4+4) CA_1A-20A(4+2) CA_3C(4+4) CA_3A-3A(4+4) CA_3A-7A(4+4) CA_3A-20A(4+2) CA_3A-28A(4+2) CA_7C(4+4) CA_7A-20A(4+2) CA_7A-28A(4+2) CA_38C(4+4) CA_1A-3C(2+4+4)(Default support)or CA_1A-3C(4+2+2)(Customizing support) CA_1A-3A-7A(4+2+2) CA_1A-3A-20A(4+2+2)(Default support)or CA_1A-3A-20A(2+4+2)(Customizing support) CA_1A-7A-20A(4+2+2)(Default support)or CA_1A-7A-20A(2+4+2)(Customizing support)" CA_3A-7C(2+4+4)(Default support)or CA_3A-7C((4+2+2)(Customizing support) CA_3A-7A-20A(2+4+2)(Default support)or CA_3A-7A-20A((4+2+2)(Customizing support) CA_3A-7A-28A(2+4+2) CA_7C-28A(4+4+2)
	West Europe	CA_1A-3A CA_1A-7A CA_1A-8A CA_1A-20A CA_1A-40A CA_3C CA_3A-3A CA_3A-7A CA_3A-8A CA_3A-20A CA_3A-28A CA_3A-40A CA_7C CA_7A-7A CA_7A-20A CA_7A-28A CA_38C CA_40C CA_3A-38A CA_42C	CA_1A-3A(4+4) CA_1A-7A(4+4) CA_1A-20A(4+2) CA_3C(4+4) CA_3A-3A(4+4) CA_3A-7A(4+4) CA_3A-20A(4+2) CA_3A-28A(4+2) CA_7C(4+4) CA_7A-20A(4+2) CA_7A-28A(4+2) CA_38C(4+4) CA_40C(4+4) CA_42C(4+4) CA_1A-3C(2+4+4)(Default support)orCA_1A-3C(4+2+2)(Customizing support) CA_1A-3A-7A(4+2+2) CA_1A-3A-20A(4+2+2)(Default support)or

Item	Specifications		
		CA_20A-38A CA_1A-3C CA_1A-3A-7A CA_1A-3A-8A CA_1A-3A-20A CA_1A-3A-40A CA_1A-7A-20A CA_1A-7C CA_3C-7A CA_3A-3A-7A CA_3C-20A CA_3A-7C CA_3A-7A-20A CA_3A-7A-28A CA_3A-7A-38A CA-7A-20A-38A CA_1A-3A-7C CA_1A-3A-7A-20A	CA_1A-3A-20A(2+4+2)(Customizing support) CA_1A-7A-20A(4+2+2)(Default support)or CA_1A-7A-20A(2+4+2)(Customizing support) CA_3C-7A(4+4+2)(Default support)or CA_3C-7A(2+2+4)(Customizing support) CA_3A-3A-7A(2+2+2) CA_3A-7C(2+4+4)(Default support)or CA_3A-7C(4+2+2)(Customizing support) CA_3A-7A-20A(2+4+2)(Default support)or CA_3A-7A-20A((4+2+2)(Customizing support) CA_3A-7A-28A(2+4+2)
	other countries	CA_1C CA_1A-19A(Japan) CA_3A-19A(Japan) CA_7A-40A CA_40A-40A CA_1A-42A CA_3A-42A CA_5B CA_38A-40A CA_4A-28A CA_1A-38A CA_1A-3A-19A(Japan) CA_1A-42C(Japan) CA_3A-42C(Japan) CA_41D CA_41A-41C CA_7C-20A CA_3C-7C CA_3A-7C-28A CA_1A-3C-7A CA_3A-3A-7A-7A CA_3A-7C-20A CA_41C-41C CA_41A-41D	CA_1A-42A(2+4) CA_3A-42A(2+4) CA_1A-42C(2+4+4)(Japan) CA_3A-42C(2+4+4)
	LTE FDD: B1/B2/B3/B4/B5/B7/B8/B19/B20/B28		
	LTE TDD: B38/B40/B41/B42		
	DC-HSPA+/HSPA+/HSPA/UMTS: B1/B2/B4/B5/B6/B8		
	EDGE/GPRS/GSM: B2/B3/B5/B8		
	WLAN: 2.4 GHz (support CH5~CH13) /5GHz		
Internal memory	4G Flash，2G DDR SDRAM		
Maximum transmitter power	LTE: Conform to Power Class 3 Definition		
	UMTS: Conform to Power Class 3 Definition		
	GSM: Conform to Power Class 3 Definition		

Item	Specifications		
	WLAN	11b：15dBm	
		11g：12dBm	
		11n(20MHz)	11dBm
		11n(40MHz)	11dBm
	5GHz	11a：13.5dBm	
		11n：12dBm	
		11ac(20MHz)	10dBm
		11ac(40MHz)	10dBm
		11ac(80MHz)	10dBm
Receiver sensitivity	LTE: Conform to 3GPP Requirements		
	UMTS: Conform to 3GPP Requirements		
	GSM: Conform to 3GPP Requirements		
	WLAN	2.4GHz	802.11b：-84.5dBm
			802.11g：-71dBm
			802.11n(20MHz) -68dBm
			802.11n(40MHz) -64dBm
		5GHz	802.11a：-72dBm
			802.11n：-70dBm
			802.11ac(20MHz) -66dBm
			802.11ac(40MHz) -62dBm
			802.11ac(80MHz) -58dBm
WLAN speed	802.11a: Up to 54 Mbit/s		
	802.11b: Up to 11 Mbit/s		
	802.11g: Up to 54 Mbit/s		
	802.11n	HT20: Support MCS0–MCS7; Up to 72.2 Mbit/s. 　　　　Support MCS8–MCS15; Up to 144.4 Mbit/s. HT40: Support MCS0–MCS7; Up to 150 Mbit/s. 　　　　Support MCS8–MCS15; Up to 300 Mbit/s.	
	802.11ac	Up to 867 Mbit/s	
Maximum power consumption	3.5 W		
Power supply	AC: 100～240 V		

Item	Specifications
	DC: 5 V, 2 A
Battery	Type: Li-ion (rechargeable)
	Capacity: 3.8 V, 3000 mAh
	Maximum working time: 12 hours (depending on the network)
	Maximum standby time: 600 hours (depending on the network)
External interfaces	USB 2.0(compatible USB 3.0)/Type-C interface
	micro-SIM card interface
Screen	Touch Screen
Key-press	Power switch, RESET switch
Antenna	Built-in LTE/UMTS/GSM main antenna
	Built-in LTE/UMTS diversity antenna
	Built-in WLAN antenna
Dimensions (W × D × H)	129.0mm ×65.0mm×13.5mm
Weight	about 152 g (including the battery)
Temperature	Operating: 0℃ to 35℃
	Storage: -20℃ to +70℃
Humidity	5% to 95% (non-condensing)

2.2.2 Software

Table 2-2 lists the software specifications.

Table 2-2 software specifications

Item	Description
SMS	• Writing/Sending/Receiving • Sending/Receiving extra-long messages • Storage: Up to 500 messages can be saved in the internal memory of the E5788u-96a.
Network connection setup	• APN management: create, delete and edit. • Set up network connection
WLAN setup	• SSID broadcasting and hiding • None (Open), WEP, WPA2-PSK, and WPA/WPA2-PSK encryption Automatic adjustment of ratios • Display STA status • Turn off Wi-Fi automatically • WLAN MAC filter
Firewall setup	• Firewall Switch • LAN IP Filter • Virtual Server • DMZ Service • UPnP Service
NAT setup	• CONE NAT • Symmetric NAT • ALG
DHCP setup	• DHCP server enabling and disabling • Address pool of the DHCP server setup • DHCP lease time setup
Software installation	Automatic installation
LTE/3G/Wi-Fi auto offload	• Accessing to WAN via LTE/3G or Wi-Fi • Automatic offload between LTE/3G and Wi-Fi
IPv4v6 dual stack (optional)	• DHCPv4v6 server and client • DNSv4v6 server and client • Display IPv4v6 WAN address
Other	Network connection settings: • Automatic network selection and registration • Manual network selection and registration

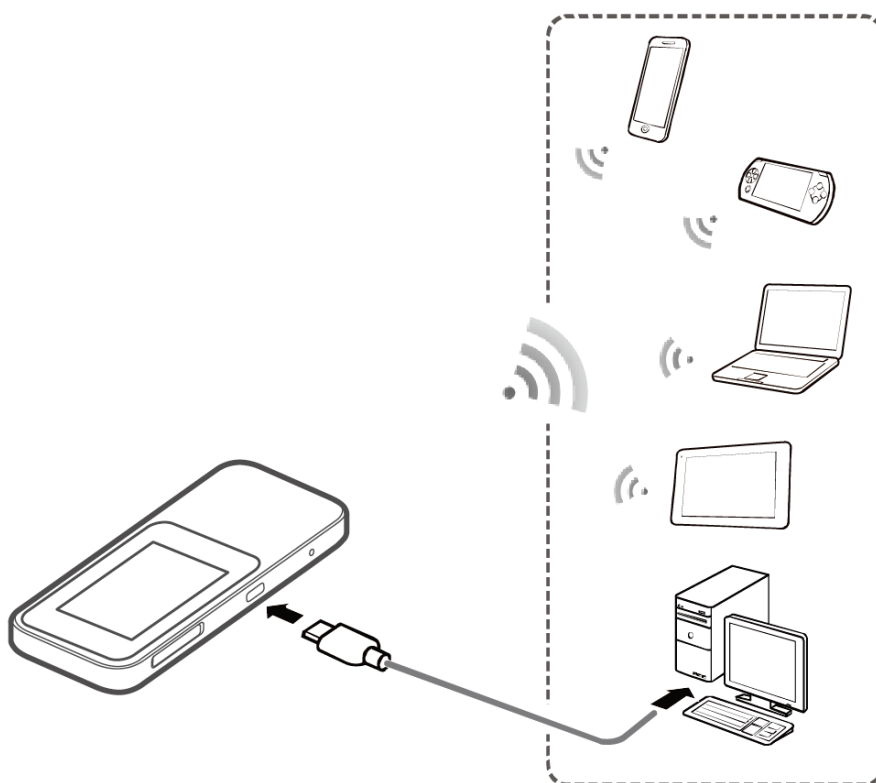| Item	Description
	Network status display: signal, operator name, system mode, and so on.
	LTE network switch: turn on/off LTE network
	PIN management: activate/deactivate PIN, PIN lock, changing PIN, unblocking by using the PUK.
System requirement	• Windows 7, Windows 8, Windows 8.1, Windows 10 (does not support Windows RT), MAC OS X 10.9, 10.10,10.11 and 10.12 with latest upgrades • Your computer's hardware system should meet or exceed the recommended system requirements for the installed version of OS

3 Services and Applications

3.1 Data Service

3.1.1 Wireless Modem

The E5788u-96a can be used as a wireless modem when the Wi-Fi is enabled. You can directly use the default settings (or configure APN on the E5788u-96a Web page) and set up a wireless network connection. Then you can access the Internet.

A maximum of 32 (depending on the network)wireless users can access the E5788u-96a at the same time. You can set up the WLAN with the access point (AP) function.
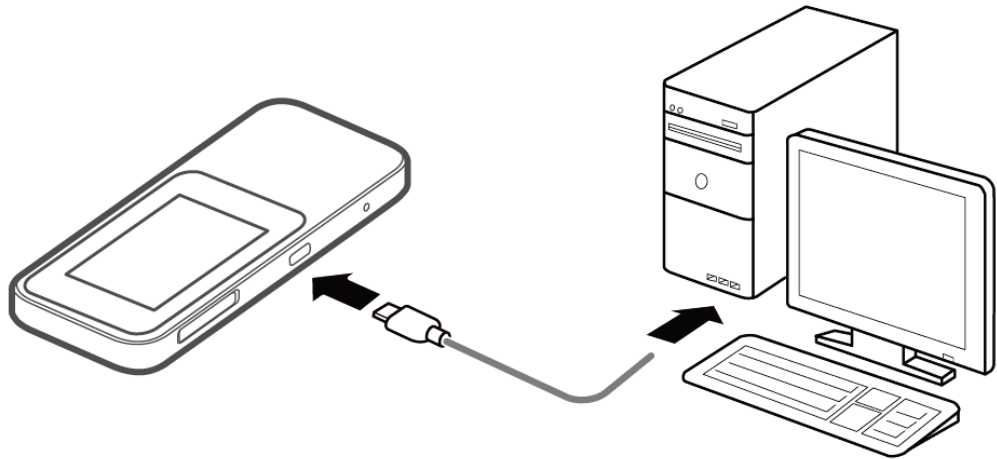
Figure 3-1 Multi-device access via Wi-Fi and USB at the same time

3.1.2 USB Modem

After you connect the E5788u-96a and PC with a USB data cable, the Web page is displayed on the PC desktops automatically. You can directly use the default settings (or configure APN on the E5788u-96a Web page) and set up a network connection. Then you can send or receive E-mail, access the network through wireless connection, and download files through wireless data channels.
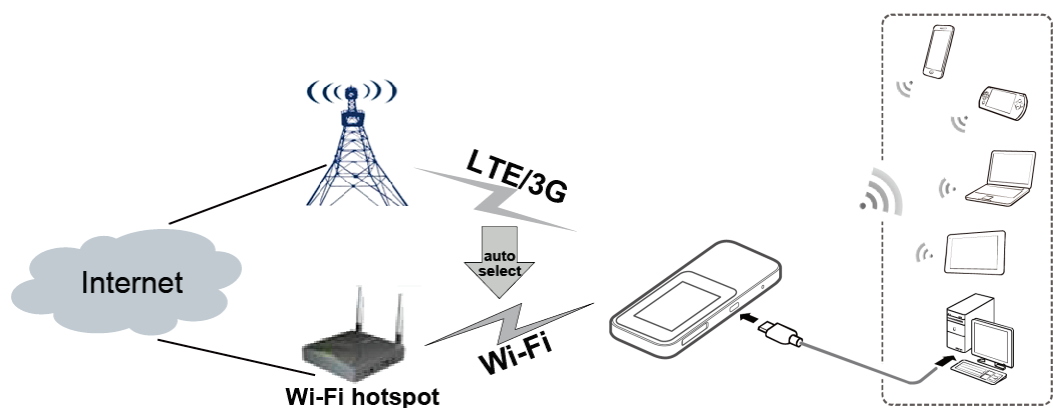
Figure 3-2 One-device access via USB

3.1.3 LTE/3G/Wi-Fi Auto Offload

The E5788u-96a allows you to access the Internet via LTE, 3G or Wi-Fi. When you are using the E5788u-96a in areas with a Wi-Fi hotspot, for example, an airport, a cafe, a hotel, or your home, the E5788u-96a switches to Wi-Fi connection automatically, saving your LTE/3G network traffic fees.
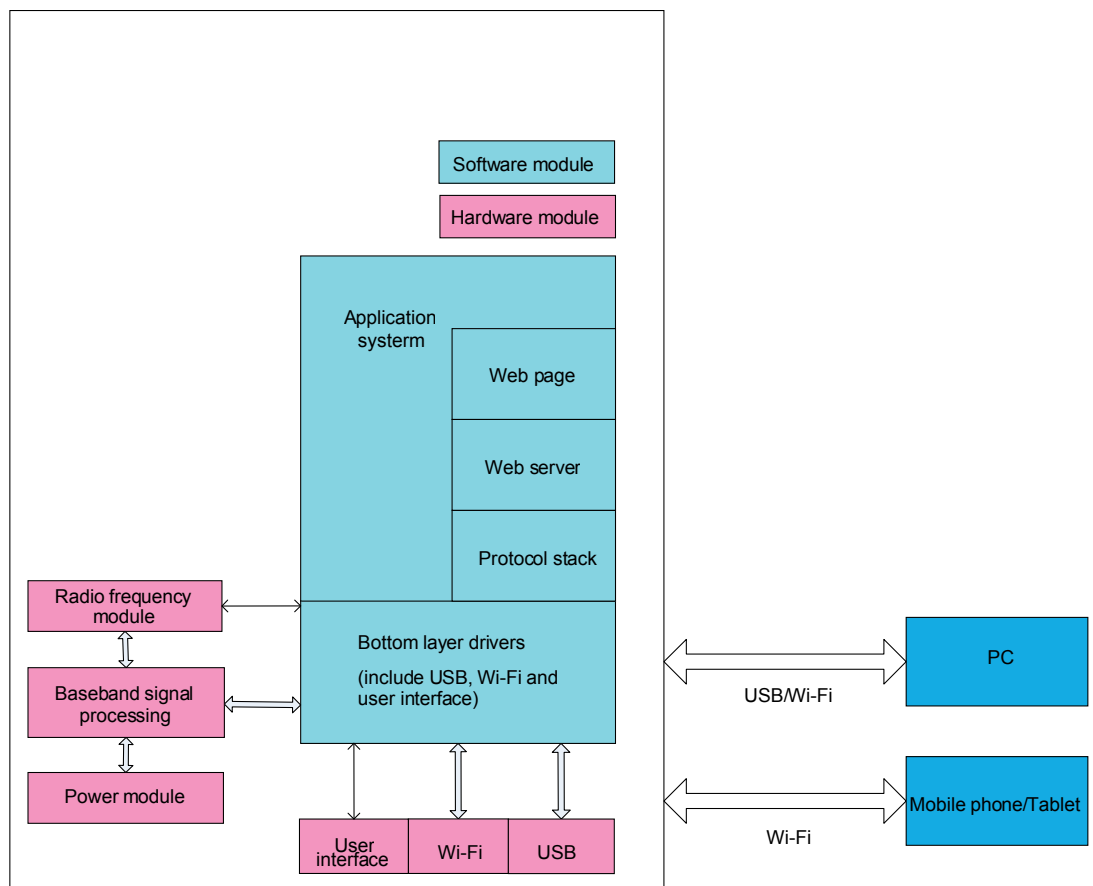
Figure 3-3 LTE/3G/Wi-Fi auto offload

4 System Architecture

4.1 System Architecture

Figure 4-1 shows the system architecture.

Figure 4-1 System architecture

4.2 Functional Modules

1. **Radio frequency module**: It sends/receives radio signals and modulates/demodulates the radio frequency (RF) signals and baseband signals

2. **Baseband signal processing**: It processes LTE CA/LTE FDD/LTE TDD /DC-HSPA+/HSPA+/UMTS/EDGE/GPRS/GSM baseband digital signals, including:

   - Modulating/Demodulating LTE CA/LTE FDD/LTE TDD /DC-HSPA+/HSPA+/UMTS/EDGE/GPRS/GSM baseband signals

   - Encoding/Decoding LTE CA/LTE FDD/LTE TDD /DC-HSPA+/HSPA+/UMTS/EDGE/GPRS/GSM channel

3. **Bottom layer driver**: It drives peripherals, including a USB device, Wi-Fi devices, a screen, buttons and a SIM card.

4. **Protocol stack system**: It processes protocols of LTE CA/LTE FDD/LTE TDD/ DC-HSPA+/HSPA+/UMTS/EDGE/GPRS/GSM and TCP/IP.

5. **Application system:** It provides management system, including SMS, PS domain service, Wi-Fi configuration, network service, Web service and Web page. The user can set management parameters by Web page.

6. **User interface:** It provides human-computer interaction, including a screen and buttons.

5 Packing List

This chapter describes the items contained in the package of the E5788u-96a.

Table 5-1 lists the items contained in the package of the E5788u-96a.

Table 5-1 Packing list of the E5788u-96a

Item	Quantity	Remarks
Mobile WiFi	1	Standard
Rechargeable Battery (irremovable,3000 mAh)	1	Standard
USB Cable	1	Standard
Quick Start(add Safety Information)	1	Standard
Charger	1	Standard
Warranty Card	1	Optional

A Acronyms and Abbreviations

3G	The Third Generation
AES	Advanced Encryption Standard
ALG	application level gateway
APN	access point name
ARPU	average revenue per user
ASCII	American Standard Code for Information Interchange
DHCP	Dynamic Host Configuration Protocol
DMZ	demilitarized zone
DNS	Domain Name Server
EDGE	Enhanced Data Rates for GSM Evolution
FDD	frequency division duplex
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
HSPA+	High Speed Packet Access Plus
HSUPA	High Speed Uplink Packet Access
HSDPA	High Speed Downlink Packet Access
IEEE	Institute of Electrical and Electronics Engineers
IP	Internet Protocol
LCD	Liquid Crystal Display
LTE	Long Term Evolution
MAC	Medium Access Control
Modem	Modulator Demodulator
NAT	Network Address Translation

OS	Operating System
PC	personal computer
PIN	personal identification number
PnP	Plug and Play
PS	packet switched
PUK	PIN unblocking key
SIM	subscriber identity module
SMS	short messaging service
SOHO	small office home office
SSID	Service Set Identifier
TFT	Thin Film Transistor
TKIP	Temporal Key Integrity Protocol
UMTS	Universal Mobile Telecommunications System
UPnP	Universal Plug and Play
USB	Universal Serial Bus
WAN	wireless area network
WEP	wired equivalent privacy
Wi-Fi	Wireless Fidelity
WLAN	wireless local area network
WPA	Wi-Fi Protected Access